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ABSTRACT

A longitudinal study of political attitudes and behavior of high school students reveals varying results when two different methods of data analysis are applied. A sample of 293 students was questioned (during their sophomore year in 1974 and again in 1976 when they were seniors) about political orientation, number of social studies classes taken, social studies classroom climate, school activities, and gender. The purpose of the study was to expand upon earlier research (Beck and Jennings, 1982) linking high school activity with youth civic orientation. When path analysis was applied, the study replicated Beck and Jennings' findings, which also resulted from path analysis. The contribution of social studies classes to political attitudes was found not to be significant while an open social studies classroom environment led to positive political attitudes. However, when two-stage least squares analysis was applied, classroom climate was found not to be a significant predictor. Also, while prior political attitudes led to political participation, increased participation resulted in more negative attitudes. For various reasons, the two-stage least squares method appears to be the most reliable, least restrictive technique and thus more appropriate for analyzing complex relationships. (KC)

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Exploring Alternative Causal Hypotheses with Across-Time Political Attitude and Participation Data

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Introduction

The field of political socialization attempts to describe and explain the acquisition of and change in political attitudes and behavior. Political socialization accounts, in part, for how youth are inducted into the political culture. As part of this descriptive and explanatory theory, researchers have arrayed and investigated a set of possible agents, or influential factors, in the political socialization process. These agents include parents, peer groups, media, and schooling. While not ignoring the other factors, of course, those of us in social education who study these questions focus most of our interest on the schooling process as it affects (and sometimes on how it is affected by) political socialization of students.

The specific aspects of schooling which might influence political behavior of students have been studied and reviewed extensively (Ehman, (1980a). It is generally agreed that social studies courses by themselves can and do contribute to political information--knowledge acquisition--but have little or no affect on political attitudes and behavior. How the classes are taught does influence attitude outcomes, however. In high school social studies classes, discussion of controversial material that is handled so that students believe that they are free to discuss several sides in an open classroom climate are more likely to have positive political attitudes than students whose teachers do not teach in this way. What students are taught contributes to knowledge; how they are taught influences attitudes.

Students' attitudes and party identification have been shown to be uncorrelated with those of their teachers, (Jennings and Niemi, 1974). However, there are correlations between teachers' and students' positions on specific political and social issues. Participation in school extracurricular activities was found to be not directly related to attitudes by Ziblatt (1965), although Almond and Verba (1963) linked positive political efficacy with participation in school decision-making.

A recent article by Beck and Jennings (1982) incorporated several agents of political socialization in a powerful analysis of the relative effects of agents. Unfortunately, they do not include a variety of schooling factors, but do have an index of high school extracurricular activity. They are reporting findings from an eight-year longitudinal study of 1965 high school seniors and their parents, who are followed up with interviews in 1973. They employ path analysis to sort out the relative impact of several variables on the young adult political participation of the former high school seniors.

The final model that Beck and Jennings test is reproduced as Figure 1 below, and requires some explanation. (Detailed descriptions of the variables and analysis can be found in the original article.) The

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Insert Figure 1 about here

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eight measures in the diagram are all indexes, or composites, of several indicator variables in the original study. "Civic orientations" refer to composites of political knowledge and attitudes including knowledge,

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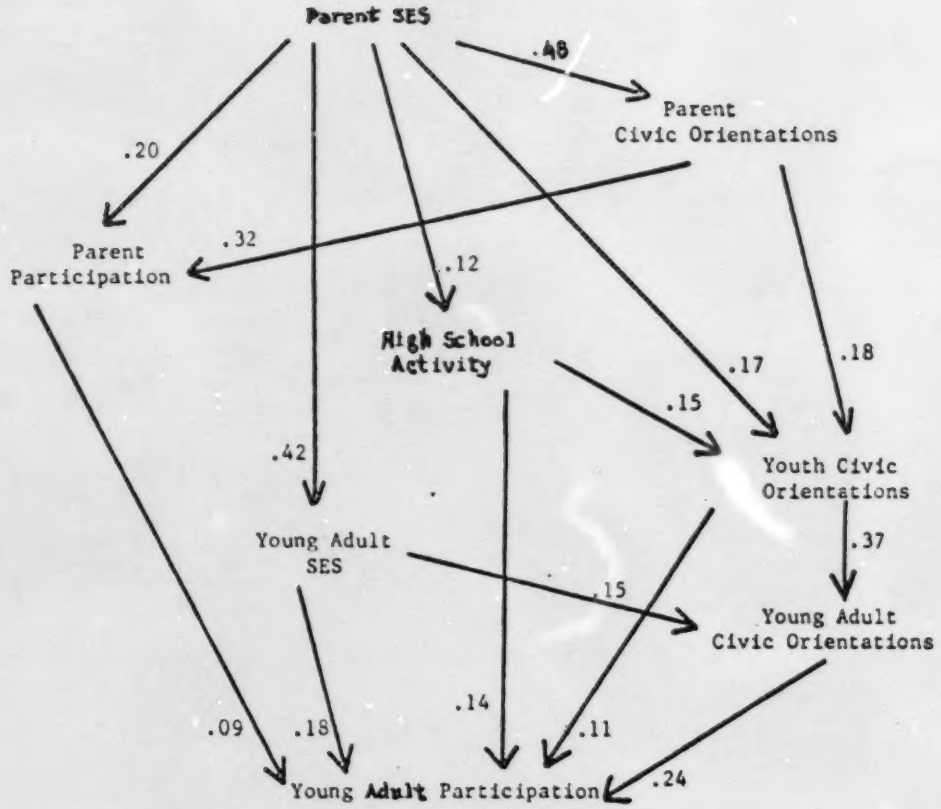

Source: 1965-73 Parent-Child Socialization Panel, Center for Political Studies, University of Michigan.

Figure 1--Reproduced from Beck and Jennings (1982), p. 104.

efficacy, and interest scales. "Political participation" include involvement in five electoral and four non-electoral political activities. All are indicators of active, rather than passive, political participation. "High school activity" refers to involvement in school elections and in extracurricular activities, with extra weighting given to active, rather than passive, involvement.

Each arrow, and corresponding path coefficient, indicates that there is a statistically significant relationship between the two measures involved. As one moves from the top to the bottom of the path diagram, one is presumably moving from cause to effect; variables such as parents' SES level in 1965 are assumed to influence variables which are subsequent in time, and not the opposite. Parents' 1965 SES, therefore, might influence their childrens' SES in 1973 ("young adult SES") but not the reverse. Similarly, "Youth civic orientations" influence "young adult civic orientations," and not the opposite. Also implicit in the one-way direction of the arrows, or causal paths, is the general assumption that attitudes influence behavior, and not the contrary. Thus, "young adult civic orientations" lead to "young adult participation," but the participation does not lead to orientations. However, it can be seen that there is a causal arrow from "High School Activity" to "Youth Civic Orientations," suggesting that behavior influences attitudes. This is an important point, as it is exactly this path that is examined closely in this paper.

The coefficients are standardized regression coefficients. They can be interpreted such that given each variable is in standard form, or having a mean of zero and a standard deviation of 1.0, then the

coefficient indicates the amount of average change in the outcome variable which is associated with a change of 1.0 in the predictor variable. An example is the .48 path coefficient between parent SES and parent civic orientations. This .48 means that if the parent SES score is changed +1.0, then the corresponding average change in civic orientations will be +.48. The larger the coefficient, the more powerful the predictor variable is in "influencing" the outcome variable. With unstandardized coefficients, no such direct comparisons can be made.

The diagram also suggests another means of interpreting the path analysis data which is important and useful. Not only are there direct causal paths between variables (parent SES to youth civic orientations), but there are indirect linkages as well (parent SES to parent civic orientations to youth civic orientations.) This latter indirect path means that parent civic orientations can mediate the linkage between parent SES and youth civic orientations of the children. The ability to compare direct and indirect causal paths is an advantage of path analysis.

For the Beck and Jennings study, the direct and indirect paths results are shown in Table 1. (Computation of the indirect paths is beyond the scope of this paper. See Asher (1976)). As shown, the indirect and direct paths are additive, so that total effects of causal variables of interest can be compared. Perhaps most striking about Beck and Jennings' findings is that the total effect of high school activity (.17) is only second to parental SES (.24) in importance in shaping young adult political participation. Parents' attitudes (.08) and participation

Table 1--Direct and Indirect Effects on Young Adult Participation from Beck and Jennings (1982)

1965 Parent SES

Direct = .04
- Indirect (via young adult status) = .09
- Indirect (via parent participation) = .02
- Indirect (via high school activities) = .02
- Indirect (via parent civic orientations) = .04
- Indirect (via youth civic orientations) = .03
- Indirect (via young adult civic orientations) = .01

Total = .24 (does not equal .24 because of rounding)

1965 Parent Civic Orientations

Direct = -.01
- Indirect (via parent participation) = .03
- Indirect (via youth civic orientations) = .04
- Indirect (via young adult civic orientations) = .02
- Indirect (via high school/activities) = .00

Total = .08

1965 Parent Participation

Direct = .09
- Indirect (via youth civic orientations) = .01
- Indirect (via high school activities) = .00
- Indirect (via young adult civic orientations) = .00

Total = .10

1965 High School Activity

Direct = .14
- Indirect (via youth civic orientations) = .03

Total = .17

(.10) are much less important factors than high school activity in accounting for the political participation of young adults eight years after high school.

Determinants of High School Activity

The present study, while not involving young adult political attitudes and behavior, does involve a longitudinal investigation of high school students' attitudes and behavior during the high school years. What we are trying to do in this paper is link the Beck and Jennings findings with our data which attempt to account for high school political behavior of students. This involves examining closely that part of the Beck and Jennings path diagram that joins "high school activity" with "youth civic orientations." We want to give a more detailed account of that particular aspect, and thus contribute to the overall understanding of this important step toward a comprehensive theory of political socialization.

From the two-year longitudinal study upon which this and other papers (Ehman, 1980b; Eyler and Ehman, 1982) are based, several school-related variables were selected. In some cases, indexes were constructed so as to closely approximate the nature of those used in the Beck and Jennings study. The resulting causal model which will be tested appears in Figure 2.

Insert Figure 2 about here

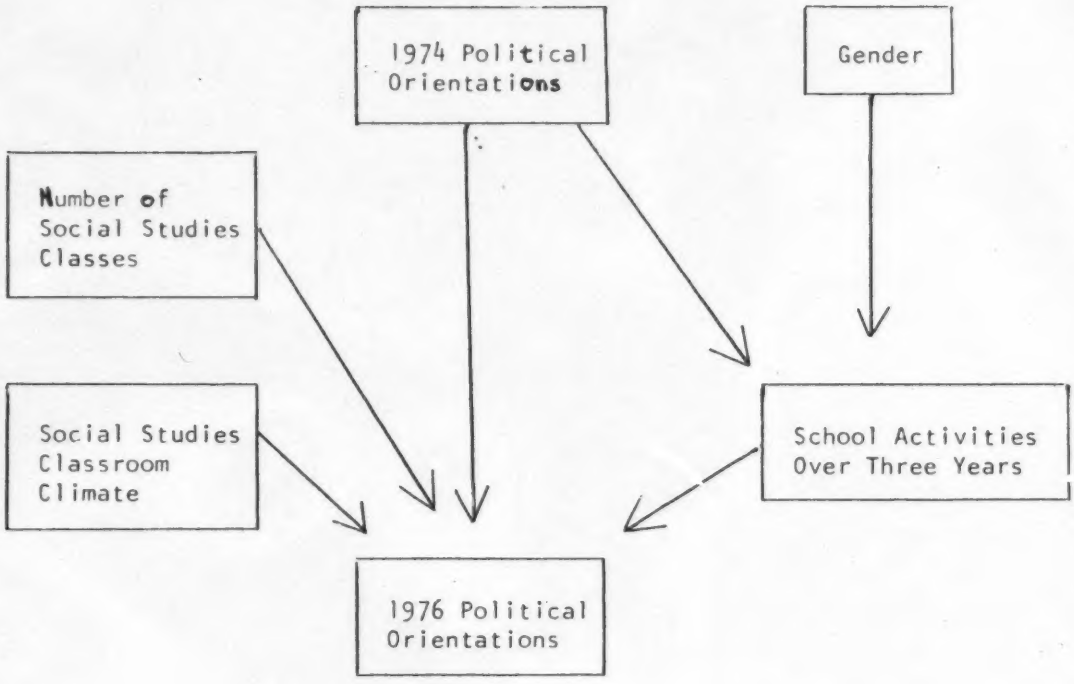

Figure 2--Hypothesized Causal Model to Account for Political Orientations of High School Seniors

Each of the paths in Figure 2 represent hypotheses about predicted causal relationships, taking the model as an entire system. Although gender has not been shown in recent research to be linked to political attitudes, it was expected that it might impact on levels of participation in high school groups, with more active participants tending to be male. Number of social studies classes was also not expected to be an influence on 1976 political attitudes, although it was included to test that previous finding from other studies. Social studies classroom climate was placed in the model on the basis of the previous literature which showed it to be one factor in political attitude development. The most fundamental part of the model is the linkage of 1974 to 1976 attitudes, both directly, and indirectly through participation in school activities. Beck and Jennings did not have available the prior attitudes of their high school seniors as sophomores, and thus could not include that variable in their analysis. The present causal model identifies this important "third variable," then, that might reasonably be expected to be correlated with both high school activity and senior attitudes. The presence of such a variable which is either unmeasured or left out of the analysis can distort causal analysis coefficient estimates, and therefore the present model improves upon the Beck and Jennings analysis by avoiding that pitfall.

Variables

The six variables in the model are all based on self-responses to paper and pencil questionnaire items. (For a more detailed account of

the studies design and procedures; see Ehman, 1980b). Gender is coded as female=1 and male=2. The number of social studies classes taken in high school, reported in 1976 by the senior students, ranged from none to nine. 1974 and 1976 political orientations refer to composite index scores on the same sixteen items in the two years. Eight are from a political efficacy scale, and the other eight from a political interest scale. Each of the two scales have Cronbach alpha reliabilities of more than .80. 1974 scores range from 1.38 to 4.67; 1976 scores range from 1.13 to 4.88. The school activities index was created by adding the number of school groups in which the student reported membership, either as a senior or earlier in high school. If the student reported one or more offices held in these groups, then a point was added to the index for each office. Finally, if the student reported a particularly active involvement in school groups, as opposed to simple membership or followership activity, an extra 5 points was added to the index. The resulting measure, indicating level of involvement in high school activities over three years, ranged from a low of 0 to a high of 23 points. Finally, the social studies classroom climate index consisted of the sum of three items on the 1976 questionnaire. They asked the extent to which the students' social studies teachers dealt with current social problems, whether the teachers presented all sides of such issues, and how free students felt to express their own opinions during such discussions. A high score on the index reflects an open classroom climate, and the scores range from 3 to 12. (The ranges of all variables are included in the following figures to assist in interpreting causal coefficients.)

Replication of the Beck and Jennings Model

The relationship between school activities and 1976 political orientations from the Beck and Jennings model, with the addition of gender, number of social studies classes taken in high school, the social studies classroom climate index, and 1974 political orientations, is tested with path analysis in Figure 3. Number of social

Insert Figure 3 about here

studies classes taken in high school has been shown before not to be an important predictor of political attitudes such as efficacy or interest (Ehman, 1980b; Jennings and Niemi, (1974) and this is borne out again with these data (path coefficient of .03). Social studies classroom climate, however, is a much better predictor of 1976 attitudes, with a significant path coefficient of .14.

Political efficacy and interest attitudes in 1974 directly predict 1976 political attitudes in this model, with the significant coefficient of .58. It is also seen that more positive 1974 political attitudes also lead to greater participation in school activities (.28). Participation, in turn, leads to more positive political attitudes. The indirect path (1974 political attitudes via high school participation to 1976 political orientations) is .04, resulting in a total effect of .62 (.58 direct and .04 indirect) of 1974 political attitudes. This is substantially more than the effects for classroom climate or school activities, which are .14 and .16, respectively. Gender is unrelated to school activity participation (-.05), although the trend is opposite the predicted direction.

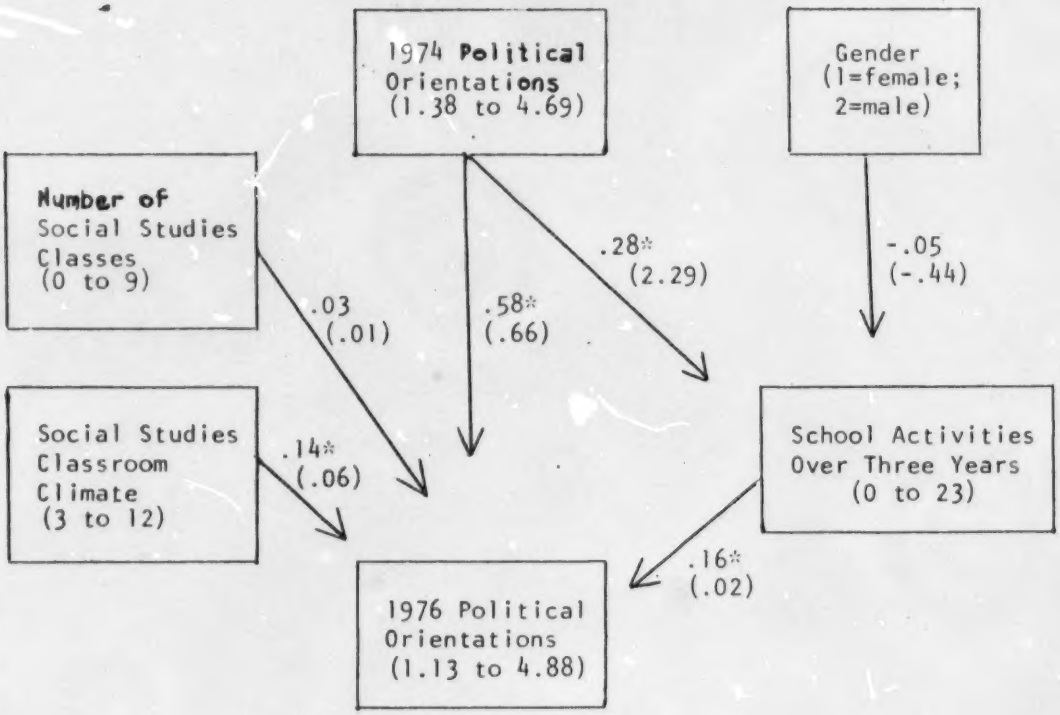
1974 Political Orientations (1.38 to 4.69)
Gender (1=female; 2=male)
Number of Social Studies Classes (0 to 9)
.28* (2.29)
-.05 (-.44)
.03 (.01)
.58* (.66)
Social Studies Classroom Climate (3 to 12)
.14* (.06)
School Activities Over Three Years (0 to 23)
.16* (.02)
1976 Political Orientations (1.13 to 4.88)

Figure 3--Causal Model to Account for Political Orientations of High School Seniors Using Path Analysis Technique

Note: Coefficients in parens are unstandardized; coefficients above those in parens are standardized, and correspond to those reported in Beck and Jennings (1982). The interpretation of the unstandardized coefficients is the amount of change in the influenced variable resulting from a one unit change in the influencing variable. For example, the 2.42 coefficient means that for a change of 1.0 on the 1974 school attitude index, there would be a corresponding change of 2.42 on the school activities index. Of course, the unstandardized coefficients are relative to the scales of measurement of the two variables involved, and thus cannot be compared, as can the standardized ones. See Kenny (1979) for a discussion of the two types of causal coefficients. Asterisks (*) indicate coefficients that are significant at the .01 level.

The Beck and Jennings contention that high school activity leads to more positive political efficacy and interest is supported by this causal model. Earlier research indicating that number of social studies classes does not influence political attitudes, but that more open social studies classroom climate does lead to more positive attitudes (Ehman, 1980a), is also supported.

Another Test of the Model

Figure 4 shows the results from testing the same model with two-stage least squares procedures (Kenny, 1979). The results differ substantially from those when path analysis was applied. First, social studies classroom climate is no longer a significant predictor of 1976 political orientations. But of far more interest is the radical difference in the causal coefficient leading from school activities to 1976 political orientations. It is now negative, -.13, and is not significant. This means that when the two stage least squares technique is applied to the present data, the positive causal link that appeared before in the path analysis results, both in Beck and Jennings and for these data, is now negative. The second analysis suggests that prior political attitudes strongly influence higher levels of activities in school organizations, but the increased activity has little feedback influence on subsequent attitudes, and what little influence there is leads to more negative attitudes.

The substantive interpretation of this latter finding is that attitudes do indeed predispose individuals to act in certain ways. If they are politically interested and efficacious, then they are much more

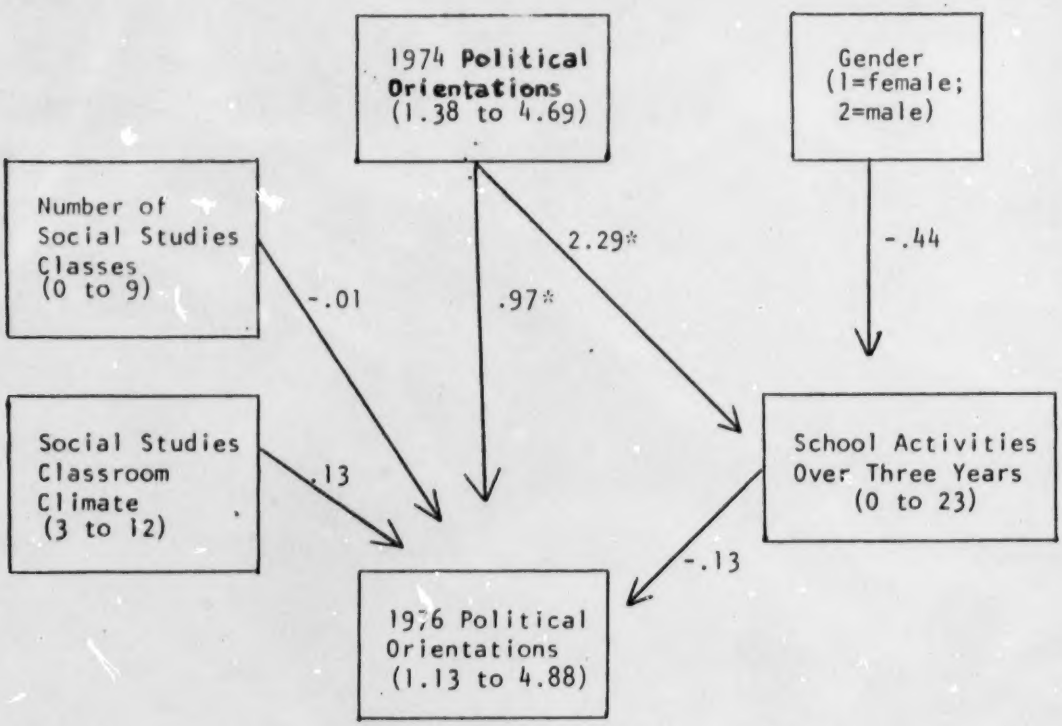

Figure 4--Causal Model to Account for Political Orientations of High Schcol Seniors Using Two-stage Least Squares Technique

Note: Coefficients are unstandardized, and can be compared to those in parens in Figure 3, but not to those in Beck and Jennings (1982).

Asterisks (*) indicate coefficients that are at least twice their standard errors, a typical test for significance of causal coefficients.

likely to participate in an active way in high school clubs and other organizations. But the increased level of activity does not have a profound influence on their attitudes--except perhaps a bit of disillusionment, represented by the small negative coefficient leading from activities to attitudes.

The substantial difference between the path analysis and two-stage least squares results are disquieting, to say the least. There are two plausible explanations, and both point up two-stage least squares as the superior procedure. First, path analysis is based on ordinary least squares (OLS), or unmodified multiple regression. One of the assumptions of the OLS is that the error terms of the variables--for example, participation in school activities and 1976 political orientations--are uncorrelated. This amounts to assuming that there are no "third variables" which exist but are not in the analysis, and which are correlated to both the other measures. (A corrolary assumption of OLS, and path analysis, is that there is no 'method' correlation resulting from using the same type of measurement for the two variables. Of course, this is also a possibility with the survey data we are using.) Although path analysis is based on these assumptions, they are often false, and the more severe the violation, the less trustworthy the estimates are of the path coefficients. Two-stage least squares procedures, however, are not restricted to these assumptions.

The second explanation has to do with the way in which the causal coefficients are computed. In both cases, they are the result of the solution of simultaneous equations. Obviously, if there are two

coefficients to be solved for, there have to be corresponding number of equations, or two. For five coefficients, there must be five equations. Part of causal modeling of any kind, whether it be path analysis or two-stage least squares, involving checking to see if there are enough equations for the coefficients to be estimated. If there are too few equations, a situation referred to as "underidentified," then any estimates, given either procedure, are meaningless. If there are just the right number, then both procedures yield dependable estimates. This is called a "just-identified" model. However, if there are more equations than coefficients to be estimated, called an "over-identified" model, then path analysis produces meaningless estimates. Two-stage least squares, on the other hand, produces dependable ones. In fact, the procedure thrives on over-identified models.

In the present case, the model is over-identified, and it is likely that error terms of at least some of the variables are correlated. Therefore, given that both of these assumptions required of path analysis are violated, and that two-stage least squares does not require the assumptions, we must conclude that the latter analysis contains the more dependable results.

Summary

From the finding in Beck and Jennings' study that participation in high school extracurricular activities leads to more positive political attitudes among high school seniors, we have tested an elaborated version of that formulation, using two different causal modeling techniques. Path analysis replicated Beck and Jennings' finding, and it

also further supported previous studies which cast doubt on the contribution of social studies classes in high school to the shaping of political attitudes of students. However, the path analysis results also indicated that open social studies classroom climate, in which controversial issues are discussed openly and with opportunity for student opinion expression, does lead to more positive political attitudes.

Two-stage least squares analysis, applied to the same model, indicated considerably different results. Classroom climate was not a significant predictor, and prior attitudes led to participation, but more participation resulted in slightly more negative subsequent attitudes, in a kind of disillusionment cycle. Perhaps the cynicism engendered by the Watergate scandal, President Nixon's resignation, and the end of the Vietnam War, fed into students' feelings about their attempts to influence the decision-making processes in their school groups. The participation might well be teaching them the frustration and difficulty in effective involvement in group activity, thus leading to a slight erosion of the very attitudes of efficacy and interest that predisposed them to become more involved in the first place.

It should be noted that in both analyses, gender had no significant effect on school participation. However, students' attitudes of political efficacy and interest as sophomores did have the effect of increasing school activities involvement. In the case of the path analysis, this in turn led to more positive political attitudes.

While path analysis of causal models is useful, and certainly a more complete way of analyzing a set of variables than taking their correlations one by one, it nevertheless requires stricter assumptions regarding the models tested than do other techniques, such as two-stage least squares procedures. In fact, while the data in the present study did in fact replicate the important Beck and Jennings findings when path analysis was used, these same findings are called into serious question when the model is tested with the two-stage least squares technique. The differences between the two sets of finds are not trivial, and point to the need for further investigation of the complex relationships involved in accounting for political socialization processes of high school youth with the least restrictive analytic procedures available.

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APPENDIX

Means and Standard Deviations of Variables (N=293)

	Mean	S. D.
1974 Political Orientations	3.0621	.5883
Number of Social Studies Classes	4.7918	2.1679
Social Studies Classroom Climate	5.4096	1.6990
School Activities Over Three Years	5.9010	4.8222
1976 Political Orientations	3.1045	.6699
Gender (1=female; 2=male)	1.4642	.4996

Correlations Among the Six Variables

	1974 Attitudes	# SS Classes	Cl. Climate	Sch Activities	1976 Attitudes
# SS Classes	.092				
Cl. Climate	.222	.006			
Sch. Activities	.277	-.018	.219		
1976 Attitudes	.660	.080	.306	.355	
Gender	.066	-.018	.168	-.028	.138

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